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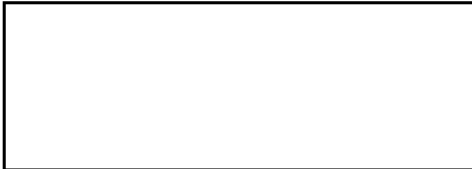
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16 September 1965

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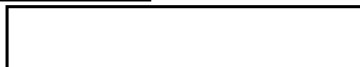
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Subject: Contract



Enclosed herewith are three (3) copies of Monthly Progress Report No. 2 for the Month of August.

If we can provide any additional information please don't hesitate to call.

Very truly yours



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Contracts Manager

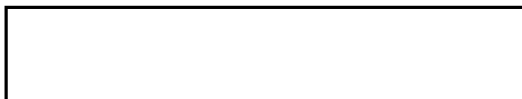
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Declass Review by NGA.

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9 September 1965

Monthly Progress Report No. 2
for the Month of August

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ELECTRONIC CIRCUITRY AND TEST

During the report period, work was continued on the design of a blanking generator and amplifier. A breadboard of the design was tested successfully on ARES.

The generator is locked synchronously to the X scan of ARES (see Fig. 1). Two monostable multivibrators are used in cascade, the first producing a delayed synchronizing pulse that triggers the blanking monostable multivibrator just before turn-around of the scan waveform. This permits the two microsecond pulse to be folded along the edge of the raster so that only one microsecond of blanking is lost from the active scan cycle.

The output of the blanking pulse generator is fed to an inverter and amplifier to produce a 60 volt peak-to-peak pulse of the correct polarity to be applied to the cathodes of the flying spot scanner cathode-ray tubes in ARES. This signal biases the CRT off during the blanking period to provide a true black reference point in the video signal from the photomultiplier.

Work was also started on the clamp circuitry for restoration of the d.c. level at the viewing cathode-ray tubes. However, it was found that the black setting circuitry of the ARES video driver performed that function satisfactorily.

Study has also begun on methods of controlling the gamma of the video signal. As discussed in the report for July, 1965, a dual channel gamma amplifier is in design. One of the two channels has a gamma of two, the other a gamma of one-half. By adding the outputs of the two channels in varying proportion so that the sum is always a constant, a very good approximation to variable gamma control is possible. Other methods are also under study. For example, an amplifier whose output is the logarithm of the input signal can be used in cascade with an anti-logarithmic amplifier with a gain control between the two. The setting of the gain control sets the gamma of the signal.

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 Progress Report

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9 September 1965

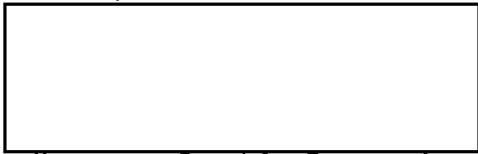
At unity gain setting the gamma is equal to one; with the gain set for 0.5 the gamma is equal to 0.5; and a gain increase of 2 will produce a gamma of two. The problem is the design of a logarithmic amplifier and anti-log amplifier that will handle the video bandwidths required.

Study of the problem of shadow suppression as a possible method of improving the performance of the correlation process suggests that separate control of gamma of the video signal in the correlation channel may be of advantage. Since a low gamma setting expands the black portion of the signal while compressing the white, and a high gamma operates to do the opposite, it is possible to give unequal weight to the black and white signal components to obtain optimum operation of the correlation circuitry. This will be studied further. It may be found that gamma control for the visual presentation for enhanced viewing will require a different setting than that required for optimum performance of the correlation circuitry. If this is so, then separate gamma controls for the visual presentation and for the correlation channels will be required.

During the next period, two gamma control amplifiers will be completed and used to test the effectiveness of correlation with various types of input material containing shadows and other variations in imagery.

Design of the three-input image integration viewer to be constructed in Phase II will be commenced.

The contractor certifies herein that he has completed no less than 30% of Phase I of this contract.


Manager, Graphic Processing Division

BCA:dm
Attachment

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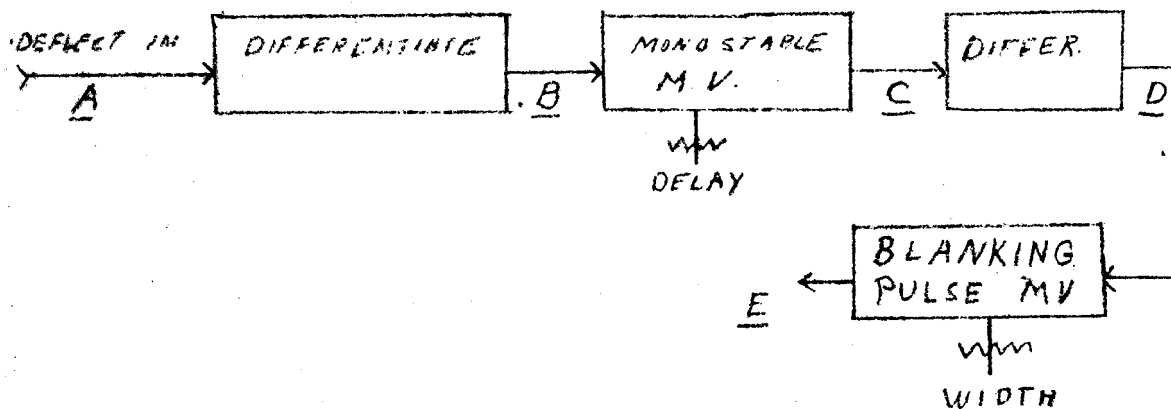
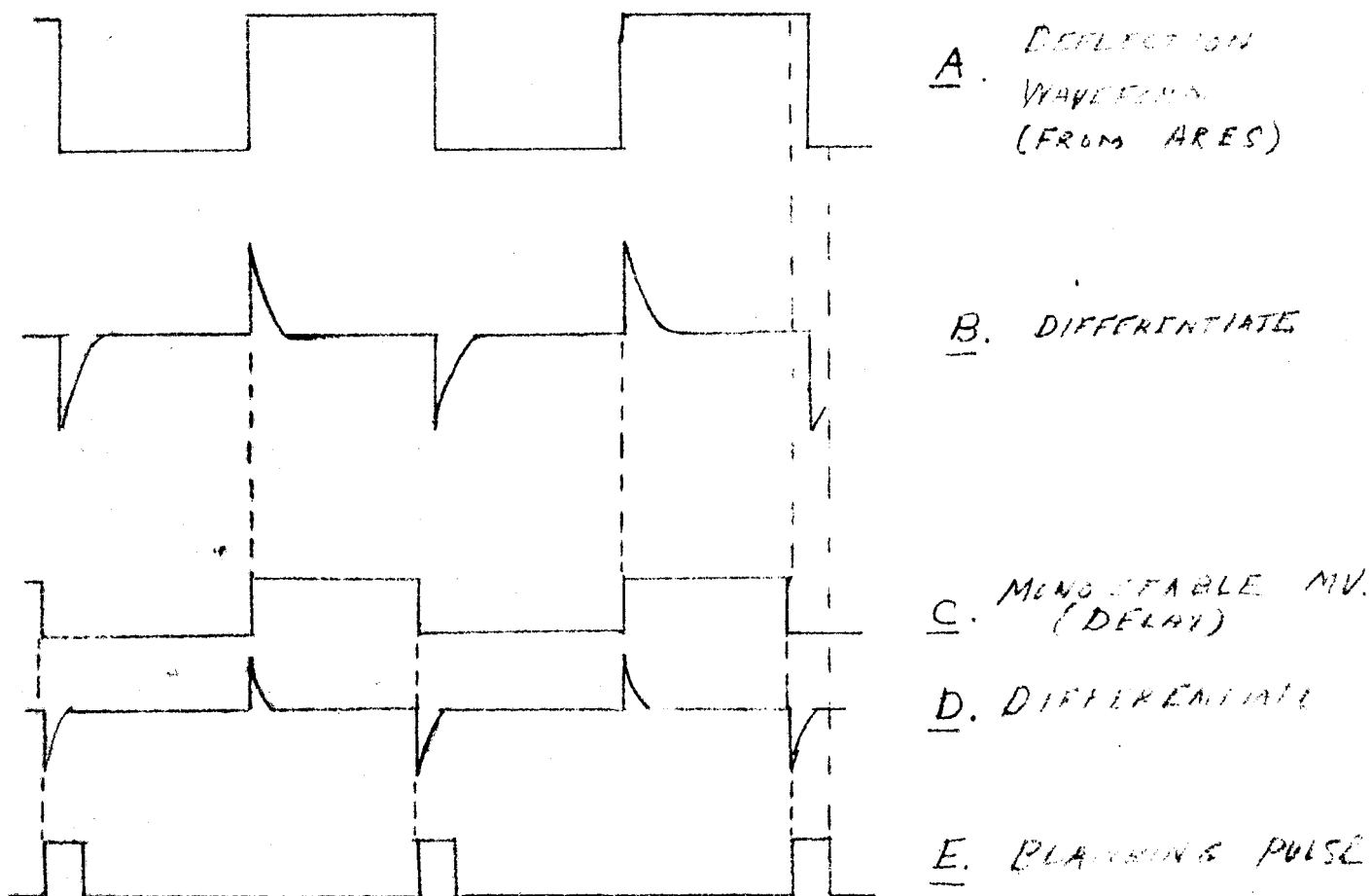


FIGURE 1. DERIVATION OF BLANKING PULSE